CONSULTATION ADDENDUM

Standards-Based Monitoring and Assurance Conditions for the Cloughton 2 Wellsite

Companion to the formal objection and the full Environmental Standards Gap Assessment

Burniston Mill, North Yorkshire | Draft permit EPR/YP3623LC/A001

Prepared by	Document
Daniel Nye, independent citizen researcher	Consultation addendum
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Status	Revised technical submission; incident-derived failure modes incorporated

Purpose

This addendum distils the strongest standards-based findings from the full comparative assessment, revised to incorporate the updated 2026 operating plans and an incident-derived failure-mode review. It does not repeat the complete reasoning, figures or source matrix. It identifies safeguards that should be fixed before relevant activities commence or before the Environment Agency treats monitoring as capable of providing reliable assurance.

Requested regulatory position

The permit should not rely on unresolved post-grant plans as isolated documents. The approved groundwater, surface-water, LDAR, hydraulic-fracture, accident-response and aftercare arrangements should operate as one controlled assurance system, with explicit baselines, detection limits, triggers, data preservation, cross-domain escalation and conceptual-model revision.

1. Findings requiring closure

No.	Issue	Grade	Present position	Minimum closure
1	Article 22 baseline report	Critical	The Environment Agency records that the submitted Site Condition Report does not contain the required baseline report. Soil and groundwater reference conditions remain incomplete or deferred.	Complete and approve a fixed soil/groundwater baseline before ground disturbance; disclose the approved report and sampling design.
2	Fault and fracture model	Critical	Fault mapping, stresses, stimulation stages, pressures, fracture controls and local seismic arrangements are deferred to PO 08.	Approve and disclose the Hydraulic Fracture Plan before stimulation, with uncertainty bounds, stop/revision rules and post-injection monitoring.
3	Groundwater seasonality	High	Three monthly baseline rounds represent one seasonal window. The site documents acknowledge waterlogging, perched water, springs and a multilayered aquifer.	Require a complete hydrological year, or a documented statistical demonstration that a shorter period captures the relevant annual range.

No.	Issue	Grade	Present position	Minimum closure
4	Hydrostratigraphic coverage	High	The three proposed installations monitor upper bedrock. A separately monitored superficial/perched system is not demonstrated.	Use nested/multilevel or separate shallow and bedrock installations where the final conceptual model supports them; justify screen lengths and target formations.
5	Groundwater parameters and triggers	High	The analyte list, limits of quantification, interpretation method and trigger levels are deferred.	Fix a chemical crosswalk linked to all drilling/stimulation substances and plausible formation constituents, with QA/QC, trend and multivariate triggers.
6	Off-site surface-water receptors	High	The Surface Water Management Plan classifies perimeter-ditch water but does not establish monitoring at Burniston Beck, nearby ditches, ponds, springs or sediment.	Select control and potentially affected receptors from the conceptual model and require rainfall-, incident- and anomaly-triggered sampling.
7	Transient air and methane	High	Four-week passive sampling, one-minute grabs and a 30-minute methane walk cannot reconstruct short releases or peaks.	Require continuous or near-real-time methane and risk-based VOC/H2S monitoring during material phases, with continuous meteorology and operational correlation.
8	Accident and cross-domain response	High	No dedicated Accident Management Plan was submitted. Separate plans do not guarantee one event record or integrated review.	Require one controlled plan, persistent event identifier, data hold, regulator/contact map, cross-domain escalation and documented closure/reopening tests.
9	Ground and drainage baseline	High	No repeatable pre-construction record of levels, cracks, ponding, seepage, drainage geometry or vegetation condition is fixed.	Require surveyed benchmarks, fixed photography and repeat inspection through construction, operation, restoration and aftercare.
10	Aftercare	High	Duration, cessation and reopening criteria remain undefined.	Set a risk-based minimum period covering recharge cycles, stable trends, well status and receptor recovery, with power to restart monitoring.
11	NORM attribution	Moderate	Operational NORM controls exist, but no receiving-environment reference is fixed.	Require proportionate fixed/control ambient gamma and risk-based soil/water/sediment baselines where the final waste and pathway assessment justifies them.
12	LDAR and flare verification	Moderate	The LDAR plan is deferred; short-duration flare use could avoid a representative annual stack test.	Fix the component inventory, thresholds, repair/verification deadlines and commissioning or phase-specific combustion verification.
13	Drilling-return gas handling	High	The Waste Gas Management Plan addresses production testing. The drilling layout does not identify a degasser, mud-gas separator, enclosed return system, vent or abatement route.	Require one complete drilling/testing process and emissions diagram; closed/captured returns by default or source-specific BAT justification, composition and monitoring.
14	Flare performance and whole-site air	High	The shrouded flare is expected to exceed 98% efficiency, while its plan acknowledges reduced/slightly lower efficiency than an enclosed flare. Short operation may avoid a direct periodic stack test.	Require flame status, actual source composition, continuous process records, quantified venting, commissioning/representative testing, continuous meteorology and event-specific reconstruction.

No.	Issue	Grade	Present position	Minimum closure
15	Seismic monitoring architecture	Critical to stimulation	PO 08 requires local seismic monitoring but no network geometry, baseline, magnitude completeness, location uncertainty, ground-motion coverage or trailing period is specified.	Require a performance-based surface/downhole or reasoned equivalent system, representative strong-motion monitoring, real-time triggers, post-injection rules and published catalogue/limitations.
16	Off-site wastewater chain	High	Formation water and flowback are routed to an unspecified permitted treatment facility. Acceptance, treatability, residual fate and final mass reconciliation are not demonstrated.	Name the receiver; provide permits, waste-specific acceptance and treatability, NORM status, secondary-residual and final-discharge accounting.
17	Vehicle and equipment transfer	High	Wheel washing is a dust control. The pad-wide liner is tertiary containment, so vehicles and mobile equipment can contact material after local containment failure.	Require clean/dirty zoning, contained underbody decontamination, incident quarantine/trace-back, segregated wash water and classified residues.
18	Complete material-flow register	High	Existing plans divide air, water, waste, NORM and transport. They do not follow a material through phase changes, engineered/natural pathways, mobile carriers, treatment residuals and final fate.	Require a regulator-approved source-to-final-fate register and reconciliation after every material phase and qualifying incident.
19	Statutory classification of the stimulation volume	Moderate	The proposed 300–500 m³ per-stage, up to four-stage stimulation (approximately 2,000 m³ maximum total) falls below the Petroleum Act 1998 s.4A/4B thresholds of 1,000 m³ per stage or 10,000 m³ in total that define “associated hydraulic fracturing” and trigger the England moratorium. The operation is accordingly outside the moratorium’s scope as a matter of law.	The sub-threshold classification should not be treated as evidence of proportionately reduced fault-interaction or induced-seismicity risk. The seismic monitoring performance specification at row 15 (C16) should be sized to site-specific fault geometry and stress uncertainty, not inferred from the statutory volume classification.
20	Methane and greenhouse gas accounting	Moderate	Rows 7, 12, 13 and 14 address fugitive methane, LDAR and flare performance as air-quality and event-detectability issues. Their greenhouse gas significance is not separately stated, though methane carries a substantially higher short-term global warming potential than the carbon dioxide produced by its complete combustion.	No additional monitoring beyond rows 7, 12, 13 and 14 (C6, C7, C15) is required. State expressly that verified, rather than nominal, source and flare performance closes both the air-quality and the site’s methane/GHG accounting question, consistent with Regulation (EU) 2024/1787 as a comparator.

2. Conditions requested

C1 — Baseline hold point: No site clearance, excavation, drainage alteration, cellar construction or imported fill placement until the regulator has approved and published a complete baseline report for relevant soil and groundwater substances, with fixed locations, strata, depths, methods, LOQs and QA/QC.

C2 — Hydrological representativeness: Groundwater monitoring shall cover twelve months before disturbance unless the operator demonstrates, using site-specific data and a regulator-approved statistical analysis, that a shorter record captures seasonal level and chemical variability.

C3 — Monitoring network design: The network shall distinguish superficial/perched and bedrock systems where present; establish upgradient and downgradient conditions; justify screen intervals; and include control and potentially affected surface-water receptors.

C4 — Chemical crosswalk and triggers: The approved plans shall map each stored, used, generated or formation-derived substance to field and laboratory parameters, analytical methods, LOQs, baseline variability, alert/action levels and investigation steps.

C5 — Event-triggered water sampling: Heavy rainfall, containment failure, unexplained level/chemistry change, bubbling, sheen, odour, sediment change, seepage or other credible observation shall trigger time-limited inspection and paired affected/control sampling.

C6 — High-time-resolution air monitoring: Continuous or near-real-time methane monitoring, selected risk-based VOC/H2S measurement, continuous meteorology and synchronised operating logs shall be used during drilling, workover, stimulation, clean-up and flow testing.

C7 — LDAR: The PO 05 plan shall include a tagged component inventory, survey technology and detection threshold, frequency, repair deadline, verification, inaccessible-component treatment and public summary reporting.

C8 — Hydraulic Fracture Plan hold point: Stimulation shall not begin until the final HFP has been approved and made available, subject only to justified security redactions. It shall define fault uncertainty, fracture containment, seismic detection completeness, trailing-event controls and stop/revision criteria.

C9 — Integrated incident plan: One controlled Accident and Environmental Event Plan shall link operational, well-integrity, seismic, air, water, radiological, noise, odour, ecological and ground-condition signals under a common event identifier and data-preservation rule.

C10 — Ground-condition baseline: Before construction, the operator shall establish surveyed levels, drainage geometry, fixed photo points and a mapped record of existing wet ground, ponding, cracks, depressions, erosion and vegetation condition.

C11 — NORM verification: Before disturbance, the operator shall justify whether a radiological receiving-environment baseline is required. Where required, calibrated fixed/control measurements and accredited soil/water/sediment methods shall be used.

C12 — Aftercare and reopening: The post-operation plan shall set a minimum duration, monitoring frequency, stability/trend tests, cessation criteria, data retention and criteria for reopening monitoring after a delayed anomaly or credible report.

C13 — Publication and review: Approved PO 01, PO 05, PO 06 and PO 08 submissions, results summaries and material revisions shall be made publicly accessible. Where a submission materially changes the assessed risk envelope, reasons and an appropriate review route shall be provided.

C14 - Complete source and emissions inventory: Before drilling reaches gas-bearing formations, provide a controlled process-flow and emissions diagram for shakers, mud tanks, degassing/separation, vents, scrubbers, knock-outs, flare, reliefs, drainage and emergency routes. Gas-bearing returns and tanks shall be closed or captured unless a source-specific BAT assessment demonstrates an alternative.

C15 - Verified flare and whole-site air performance: Monitor flame/pilot status, feed flow, composition, methane, calorific value, temperature and relevant pressure; quantify every cold-vented quantity; undertake commissioning and representative pollutant/destruction verification; maintain continuous meteorology; and reconstruct qualifying events using actual operational time and source estimates.

C16 - Seismic monitoring performance: The HFP shall define the pre-injection baseline, station geometry, minimum detectable magnitude, catalogue completeness, location uncertainty, surface/downhole or reasoned equivalent monitoring, strong-motion coverage, real-time triggers, trailing-event duration, restart/abandonment rules, independent verification and publication.

C17 - Off-site waste acceptance and mass balance: No formation water or flowback shall leave the site until a named receiver has accepted representative analysis against its permits and limits. Reconcile generated, stored, loaded, delivered, accepted, treated, discharged/recovered and residual quantities, including NORM and treatment by-products. Dilution shall not be evidence of treatment.

C18 - Vehicle/mobile-equipment decontamination: Use defined dirty and clean zones and a final impermeable contained transition area. Following any spill or suspected contact with formation-derived or NORM-bearing material, quarantine affected vehicles/equipment, segregate and classify wash water/residues, trace any departed vehicle and inspect the clean route before movement resumes.

C19 - Material-flow and incident closure: Maintain a source-to-final-fate register covering gas, liquids, solids, engineered and natural pathways, mobile carriers, off-site treatment and cross-phase transformation. Every qualifying event shall preserve one synchronised operational, environmental, meteorological and waste-chain record and remain open until final fate and model implications are documented.

3. Balanced conclusions

The application contains genuine safeguards. These include a lined containment system, no routine surface-water discharge, proposed weekly groundwater sampling during drilling and testing, independent laboratory analysis, continuous flare process monitoring, NORM waste controls, an LDAR pre-operational condition and a comparatively detailed noise assessment. The revised review does not treat those controls as valueless; it asks whether their real operating performance, interfaces and final material fate are measurable.

The objection is therefore not that monitoring is absent. The question is whether the detection envelope is wide enough and the filter fine enough to capture the relevant event, whether prediction is checked against actual source and control performance, whether evidence follows material beyond the site gate and through phase changes, and whether captured evidence can revise the conceptual model.

The proposed conditions are intended to make the permit's existing pre-operational controls scientifically testable, publicly reviewable and operationally auditable. They do not presume that contamination, migration, deformation or harm will occur.

4. Legal and technical status

Status	Use in this addendum
Binding UK law / permit	Environmental Permitting (England and Wales) Regulations 2016; Water Environment Regulations; permit conditions and approved operating techniques; Petroleum Act 1998, ss.4A–4B (inserted by Infrastructure Act 2015, s.50) — statutory volume threshold defining "associated hydraulic fracturing" and the scope of the moratorium.
UK regulator guidance	Environment Agency onshore oil and gas monitoring guidance, sector guidance, MCERTS and management-system guidance.
EU-derived domestic context	Industrial Emissions, Water Framework, Groundwater and Mining Waste requirements as implemented through UK domestic law.
Current EU comparator only	Commission Recommendation 2014/70/EU and Regulation (EU) 2024/1787 do not directly bind this English permit; they are used only as contemporary European comparators.
International benchmark	ISO 5667 water sampling, ISO 18400 soil sampling, ISO/IEC 17025 laboratory competence and ISO 16530-1 well-integrity lifecycle governance.

5. Source basis

- The complete applicant package reviewed for the bespoke mining-waste, installation and groundwater-activity application, including the Environmental Risk Assessment, Hydrogeological Impact Assessment, Site Condition Report, Waste Management Plan, Surface Water Management Plan, Air Quality Impact Assessment and Monitoring Plan, Odour documents, Noise and Vibration Impact Assessment, well schematic and chemical/SDS inventories.
- The Environment Agency draft decision document and draft permit EPR/YP3623LC/A001, including PO 01, PO 05, PO 06, PO 08 and the monitoring tables.
- Current official UK legislation and Environment Agency, HSE and NSTA guidance available on 6 August 2026.
- Official European Union legislation and Commission guidance used with the legal-status distinctions stated above.
- International technical standards identified in the full report.

Relationship to the full report

This addendum should be read with Environmental Monitoring and Assurance at the Cloughton 2 Wellsite: A Comparative Assessment of UK Legal Requirements, European Environmental Standards and Internationally Recognised Technical Practice, v1.1, 6 August 2026. The full report contains the HYSPLIT trajectory illustrations, the PNR operational figure, the detailed material-pathway register and the incident-derived case review.

End of addendum